

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 03-023250

(43)Date of publication of application : 31.01.1991

(51)Int.Cl.

C04B 35/00

A61K 6/033

A61L 27/00

(21)Application number : 01-155720

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(22)Date of filing : 20.06.1989

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## (54) PRODUCTION OF CALCIUM PHOSPHATE COMPLEX MATERIAL DISPERSED ZIRCONIA

(57)Abstract:

PURPOSE: To improve the strength and toughness of the complex material by hydrothermally treating a slurry of  $\text{Ca}_3(\text{PO}_4)_2$  compd. powder contg. dispersed  $\text{ZrO}_2$  to obtain the mixed powder in which  $\text{ZrO}_2$  is uniformly dispersed in the  $\text{Ca}_3(\text{PO}_4)_2$  powder and then sintering the mixed powder.

CONSTITUTION:  $\text{ZrO}_2$  having 10-1000nm grain diameter is suspended in an aq. Ca ion soln. such as an aq. soln. of  $\text{Ca}(\text{NO}_3)_2$ , and an aq. phosphate ion soln. such as an aq. soln. of  $(\text{NH}_4)_2\text{HPO}_4$  is added to cause a reaction, and the mixed powder of the  $\text{Ca}_3(\text{PO}_4)_2$  compd. and  $\text{ZrO}_2$  is precipitated. A slurry of the mixed powder is hydrothermally treated at ordinary pressure and 100-300° C for 0.1-24hr to obtain a mixed powder in which 5-60vol.% of  $\text{ZrO}_2$  is uniformly dispersed in the  $\text{Ca}_3(\text{PO}_4)_2$  compd. powder. The mixed powder is dried and formed, and then the formed product is sintered at 800-1200° C and 2-100MPa for 0.2-10hr. The sintered body is further post-sintered at 800-1200° C and 50-400MPa in an inert gas such as Ar to obtain the  $\text{Ca}_3(\text{PO}_4)_2$  complex material dispersed  $\text{ZrO}_2$  having 3.0-3.6g/cm<sup>3</sup> density.

## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]